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Serial No. 09/989,933
Page 4**AMENDMENTS TO THE CLAIMS**

This listing of claims replaces all prior versions and listings of claims in the application.

Listing of Claims

Claims 1-34 (Canceled)

35. (Previously presented) An isolated nucleic acid molecule comprising a sequence as set forth in SEQ ID NO: 11, or a degenerate variant thereof wherein said degenerate variant encodes the same amino acid sequence encoded by SEQ ID NO:11.

Claim 36 (Canceled)

37. (Previously presented) A vector designated as pBVDdN6 (ATCC No. PTA-2532) (SEQ ID NO: 12).

Claims 38-41 (Canceled)

42. (Withdrawn) A method of modifying the genomic nucleic acid molecule of an isolated wild type bovine viral diarrhea virus comprising:

- (a) creating a mutated N^{pro} coding sequence comprising an intact 5' region of at least 36 base pairs, wherein said mutated N^{pro} coding sequence encodes an inactive N^{pro} protein; and
- (b) inserting a sequence coding for a monomeric bovine ubiquitin between the mutated N^{pro} coding sequence and the coding sequence of the core protein.

43. (Withdrawn) The method of claim 42 wherein the mutated N^{pro} coding sequence comprises an intact 5' region of at least 310 base pairs.

44. (Withdrawn) A method of attenuating an isolated wild type bovine viral diarrhea virus, comprising

- (a) isolating the genomic nucleic acid molecule from said virus,
- (b) creating a mutated N^{pro} coding sequence comprising an intact 5' region of at least 36 base pairs, wherein said mutated N^{pro} coding sequence encodes an inactive N^{pro} protein; and;
- (c) inserting a sequence coding for a monomeric bovine ubiquitin between the mutated N^{pro} coding sequence and the coding sequence of the core protein; and producing from the modified genome an attenuated virus suitable for use in a vaccine.

45. (Withdrawn) The method of claim 44 wherein the mutated N^{pro} coding sequence comprises an intact 5' region of at least 310 base pairs.

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Claims 46-47 (Canceled)

48. (Withdrawn) A method of inducing an immune response against bovine viral diarrhea virus in an animal subject, comprising administering an immunologically effective amount of the attenuated bovine viral diarrhea virus of claims 30 or 32 and a veterinarily-acceptable carrier.

49. (Withdrawn) A method of inducing an immune response against bovine viral diarrhea virus in an animal subject, comprising administering an immunologically effective amount of the isolated nucleic acid molecule of claims 33 or 34.

50. (Withdrawn) The method of claim 48, wherein said immune response is a cellular or humoral immune response.

51. (Withdrawn) The method of claim 49, wherein said immune response is a cellular or humoral immune response.

52. (Withdrawn) The method of claim 48 wherein said immune response results in the production of antibodies against bovine viral diarrhea virus in said animal.

53. (Withdrawn) The method of claim 49, wherein said immune response results in the production of antibodies against bovine viral diarrhea virus in said animal.

Claims 54-55 (Canceled)

56. (Withdrawn) A method of treating a bovine viral diarrhea virus infection in an animal, comprising administering to said animal, a therapeutically effective amount of the attenuated bovine viral diarrhea virus of claims 30 or 32.

57. (Withdrawn) A method of treating a bovine viral diarrhea virus infection in an animal, comprising administering to said animal, a therapeutically effective amount of the isolated nucleic acid molecule of claims 33 or 34.

58. (Withdrawn) A method of identifying a bovine viral diarrhea virus in an animal as an attenuated bovine viral diarrhea virus of any of claims 30-32, said animal suspected of suffering a bovine viral diarrhea virus infection, comprising isolating the virus from said animal, detecting the presence of a ubiquitin coding sequence between a mutated N^{pro} coding sequence and the coding sequence of the core protein, thereby determining the isolated virus as identical to the attenuated bovine viral diarrhea virus of claims 30-32.

59. (Withdrawn) A method of identifying a bovine viral diarrhea virus in an animal as an attenuated bovine viral diarrhea virus of claims 30-32, said animal suspected of suffering a

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bovine viral diarrhea virus infection, comprising isolating the virus from said animal, detecting the presence of the mutation in the N^{pro} gene, thereby determining the isolated virus as identical to the attenuated BVD virus of any of claims 30-32.

Claims 60-68 (Canceled)

69. (Withdrawn) A method of inducing an immune response against bovine viral diarrhea virus in an animal subject, comprising administering an immunologically effective amount of the attenuated bovine viral diarrhea virus of claims 31 or 60 and a veterinarily-acceptable carrier.

70. (Withdrawn) A method of inducing an immune response against bovine viral diarrhea virus in an animal subject, comprising administering an immunologically effective amount of the isolated nucleic acid molecule of any of claims 35, 61, or 62.

71. (Withdrawn) The method of claim 69, wherein said immune response is a cellular or humoral immune response.

72. (Withdrawn) The method of claim 70, wherein said immune response is a cellular or humoral immune response.

Claims 73-74 (Canceled)

75. (Withdrawn) A method of treating a bovine viral diarrhea virus infection in an animal, comprising administering to said animal, a therapeutically effective amount of the attenuated bovine viral diarrhea virus of claims 31 or 60.

76. (Withdrawn) A method of treating a bovine viral diarrhea virus infection in an animal, comprising administering to said animal, a therapeutically effective amount of the isolated nucleic acid molecule of any of claims 35, 61, or 62.

77. (New) A bovine viral diarrhea (BVD) virus wherein said virus carries in the viral genome a mutated N^{pro} coding sequence comprising:

- (a) a deletion comprising 196 base pairs of the coding sequence from the 3' end of the N^{pro} coding sequence; and
- (b) an insertion of the coding sequence for a bovine ubiquitin, wherein the ubiquitin is placed downstream of the partial N^{pro} coding sequence and upstream of the coding sequence for the viral core protein.

78. (New) A BVD virus wherein said virus carries in the viral genome a mutated N^{pro} coding sequence comprising:

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- (a) a deletion of the coding sequence from the 3' end of the N^{pro} coding sequence;
 - (b) an intact 5' region of at least 308 base pairs; and
 - (c) an insertion of the coding sequence for a bovine ubiquitin, wherein the ubiquitin is placed downstream of the partial N^{pro} coding sequence and upstream of the coding sequence for the viral core protein.
79. (New) An immunogenic composition comprising the BVD virus as in either claim 77 or claim 78 and a veterinarily-acceptable carrier.
80. (New) A vaccine composition comprising the BVD virus as in either claim 77 or claim 78 and a veterinarily-acceptable carrier.
81. (New) An isolated nucleic acid molecule comprising the genomic sequence of a BVD virus, wherein said virus carries in the viral genome:
- (a) a deletion comprising 196 base pairs of the coding sequence from the 3' end of the N^{pro} coding sequence; and
 - (b) an insertion of the coding sequence for a bovine ubiquitin, wherein the ubiquitin is placed downstream of the partial N^{pro} coding sequence and upstream of the coding sequence for the viral core protein.
82. (New) A nucleic acid molecule comprising the genomic sequence of a BVD virus, wherein said virus carries in the viral genome:
- (a) a deletion of the coding sequence from the 3' end of the N^{pro} coding sequence;
 - (b) an intact 5' region of at least 308 base pairs; and
 - (c) an insertion of the coding sequence for a bovine ubiquitin, wherein the ubiquitin is placed downstream of the partial N^{pro} coding sequence and upstream of the coding sequence for the viral core protein.
83. (New) A vector comprising the isolated nucleic acid molecule as in any one of claims 35 or 81-82.
84. (New) A cell transformed or transfected with a nucleic acid molecule as in any one of claims 35 or 81-82.
85. (New) An isolated cell transformed or transfected with the vector as in either claim 37 or claim 83.
86. (New) A progeny virus produced by the cell as in either claim 84 or claim 85.

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87. (New) An immunogenic composition comprising the isolated nucleic acid molecule as in any one of claims 35 or 81-82 and a veterinarily-acceptable carrier.

88. (New) A vaccine composition comprising the isolated nucleic acid molecule as in any one of claims 35 or 81-82 and a veterinarily-acceptable carrier.

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